



The Importance of Gaia for J-PAS and J-PLUS

A. Ederoclite

**V Reunión Científica REG - Encuentro en la Segunda Fase
29 May 2018 - Day 34 After Gaia DR2**



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J-Ederoclite

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29 May 2018 - Day 34 After Gaia DR2

Teruel

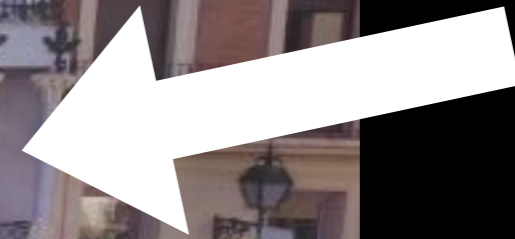
Ciudad
del
Amor



Ciudad
del
Jamón

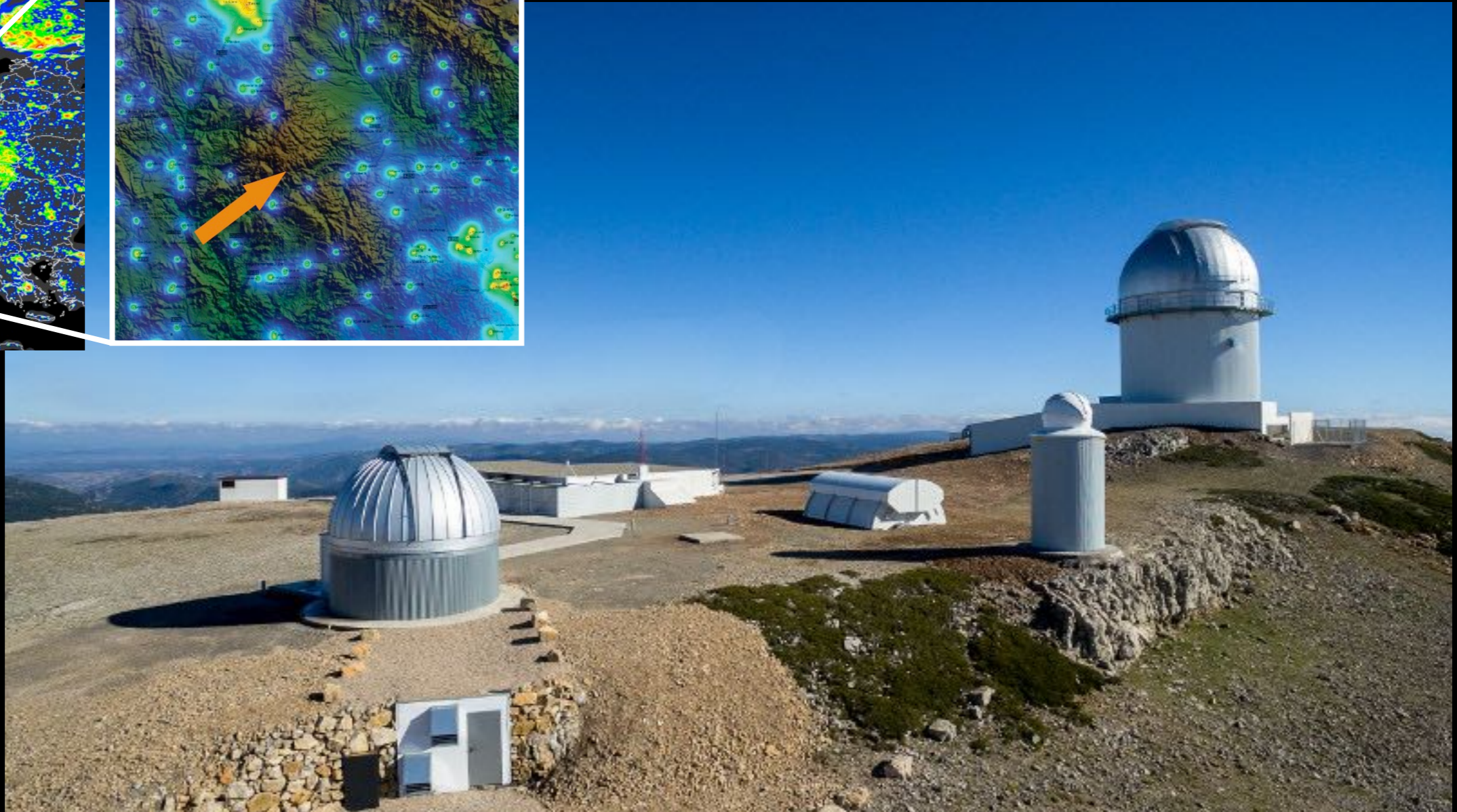
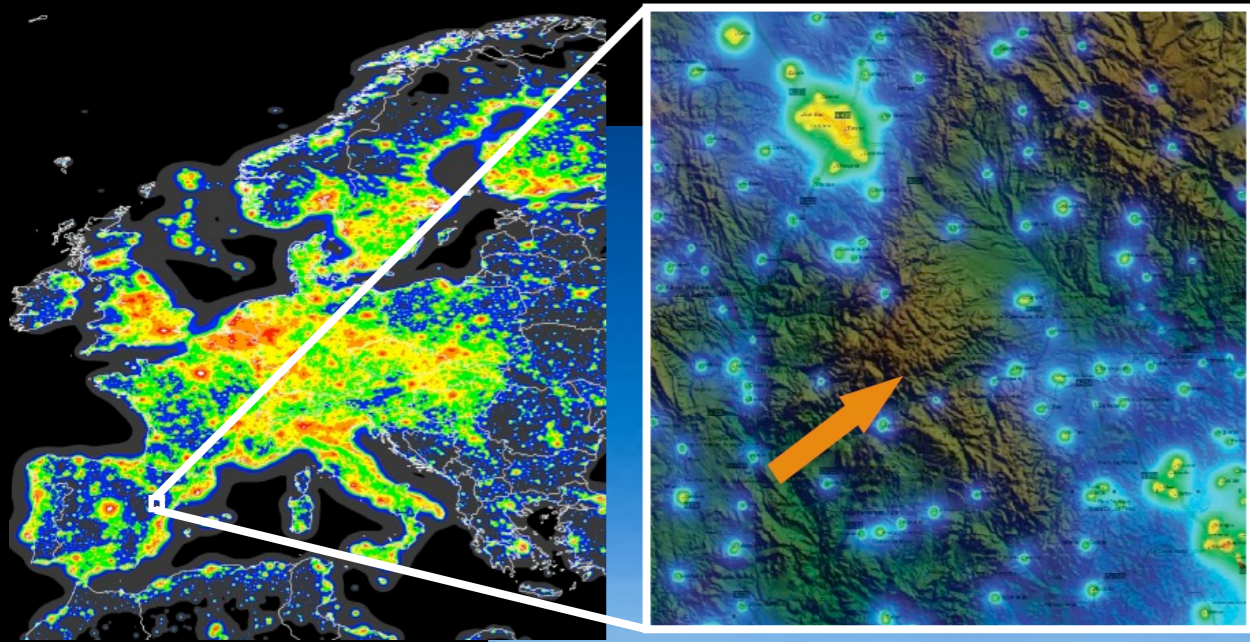


Ciudad
del
Torico





El Observatorio Astrofísico de Javalambre



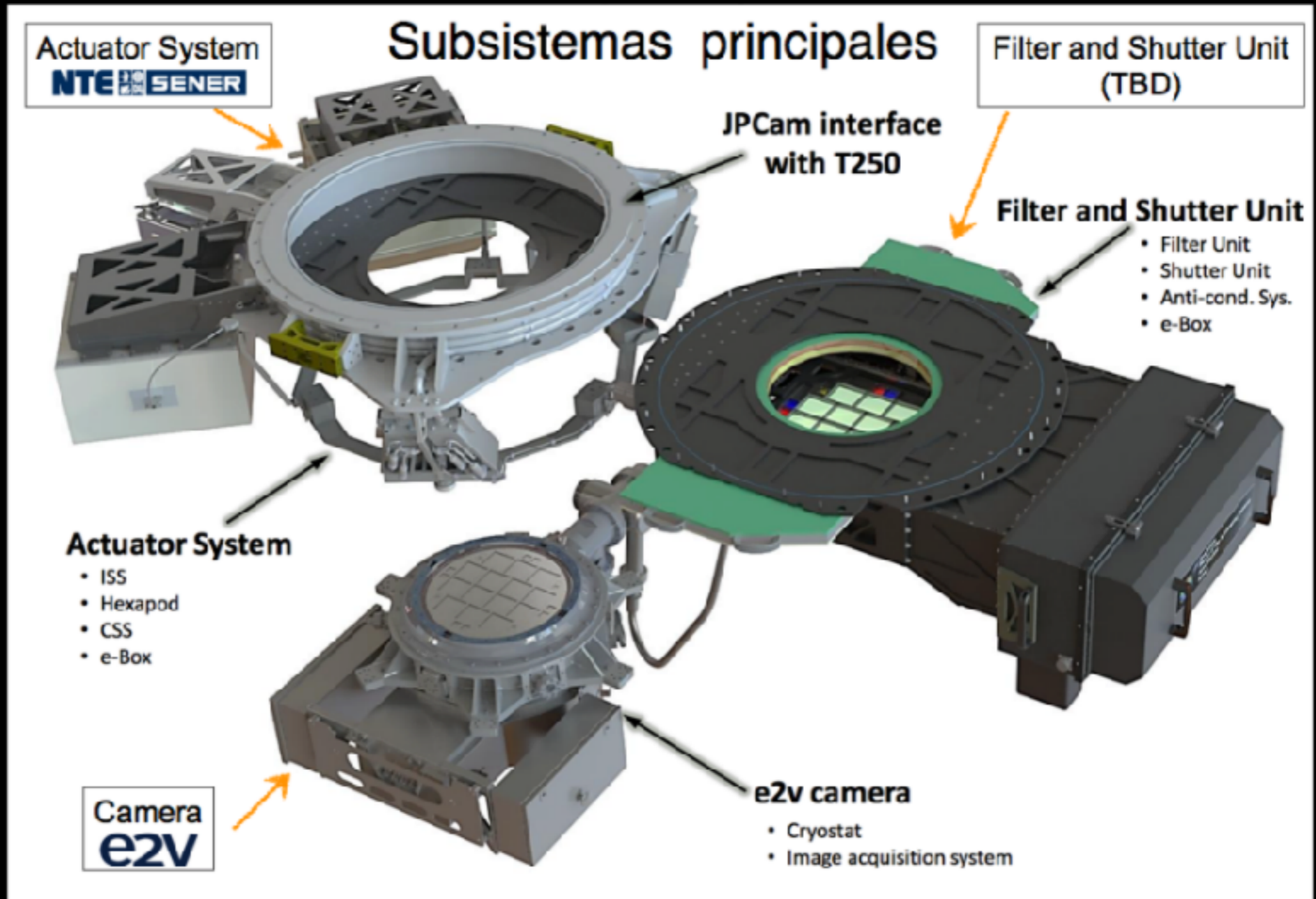
T250/JST



2.50m
f/3.5

FoV = 5sq.deg.

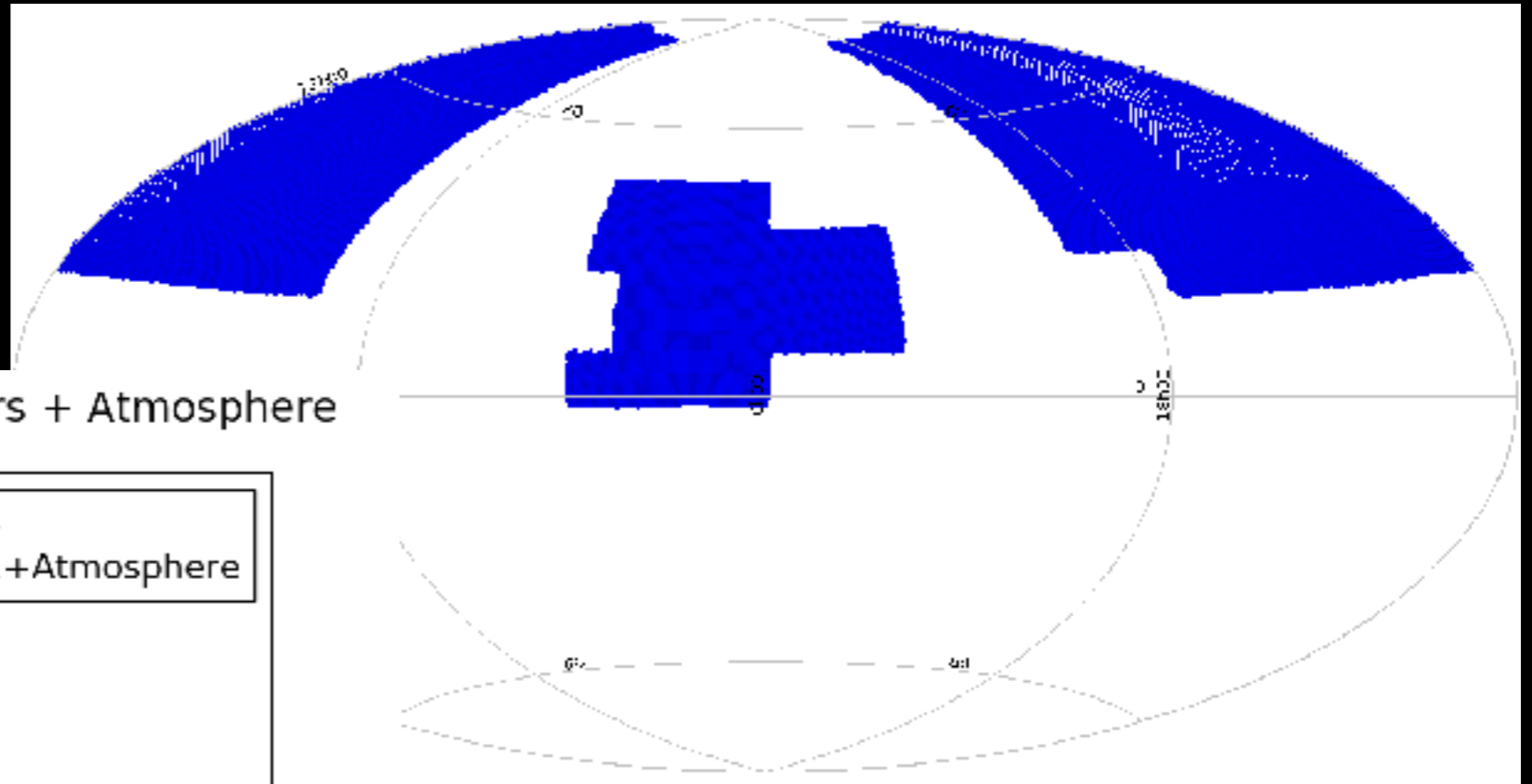
JPCam



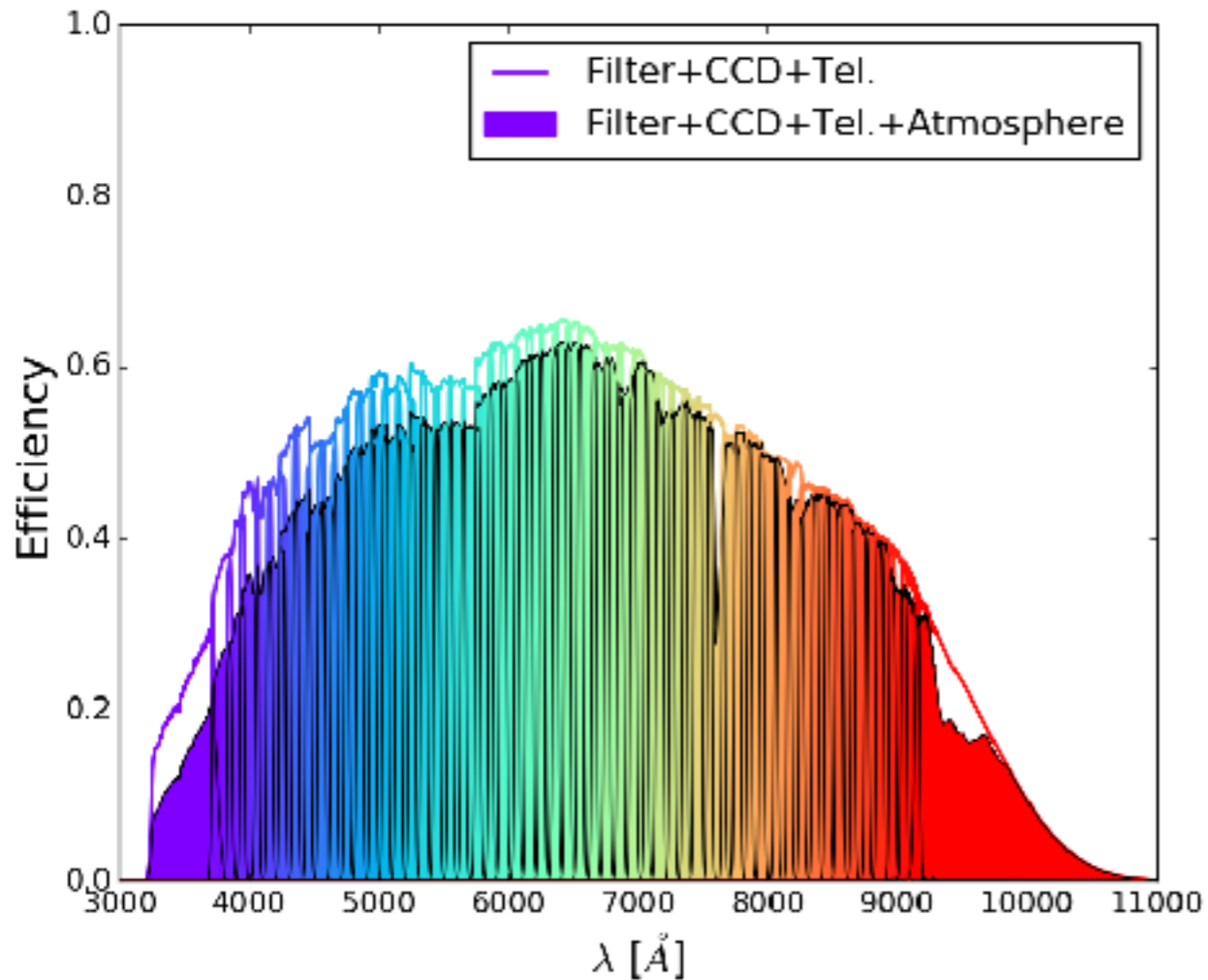
14 x 9kx9k
e2v CCDs

J-PAS

8,500 sq.deg.
54 narrow band filters
2 intermediate band filters
3 broad band



Overall efficiency system JPCam + Filters + Atmosphere



400 M galaxies

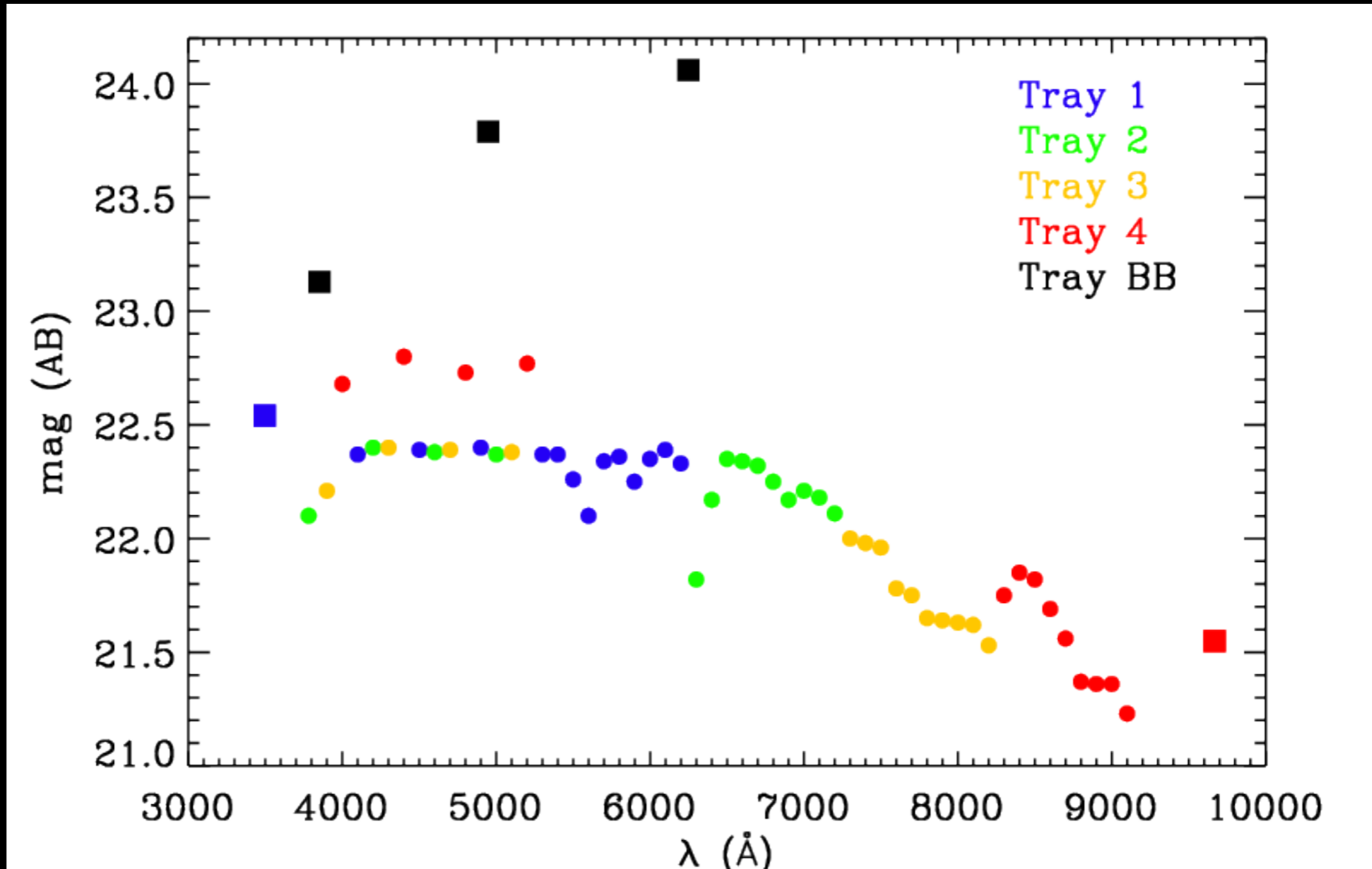
400 M stars

2 M quasars

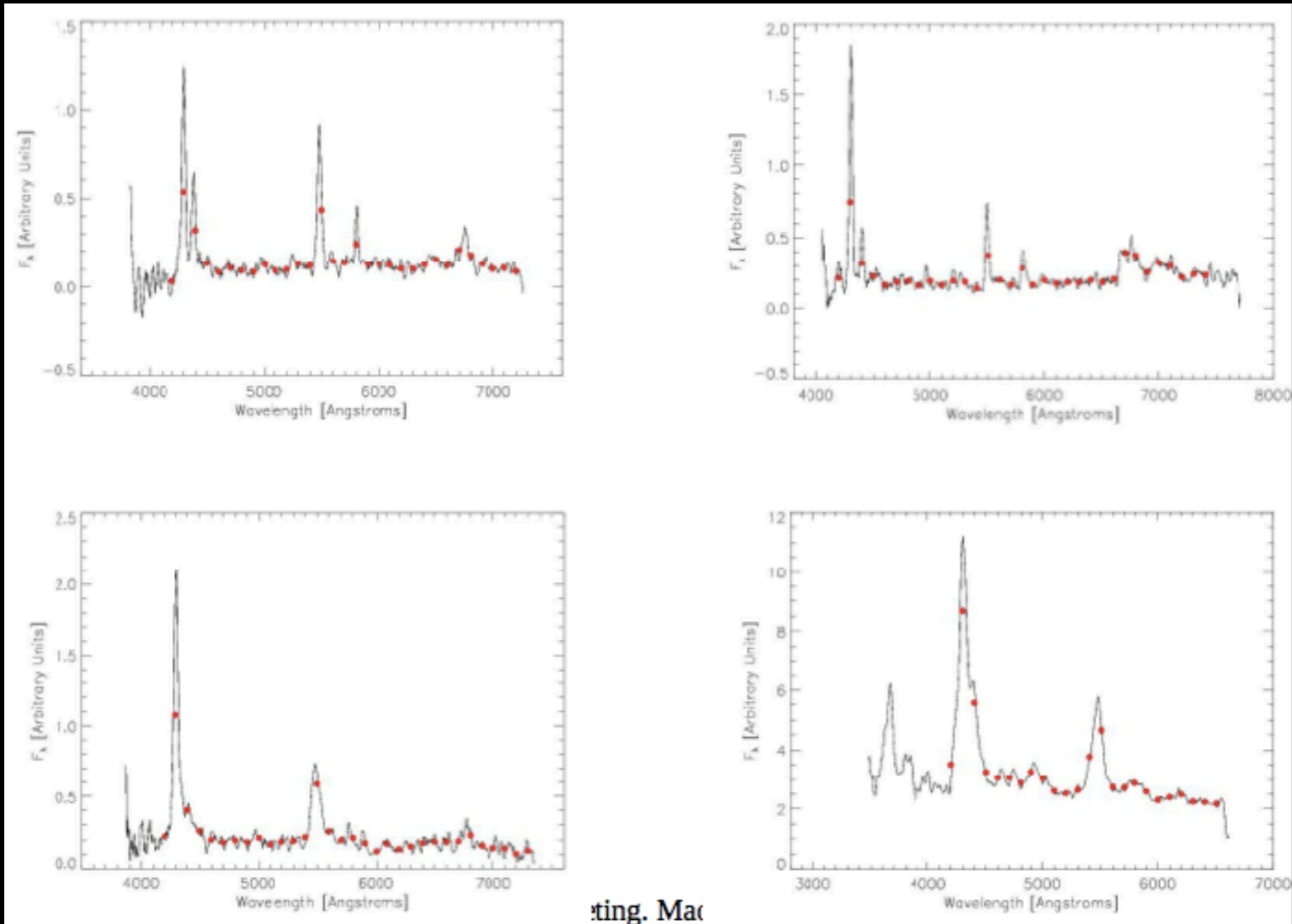
4000 SNe Ia

J-PAS depths

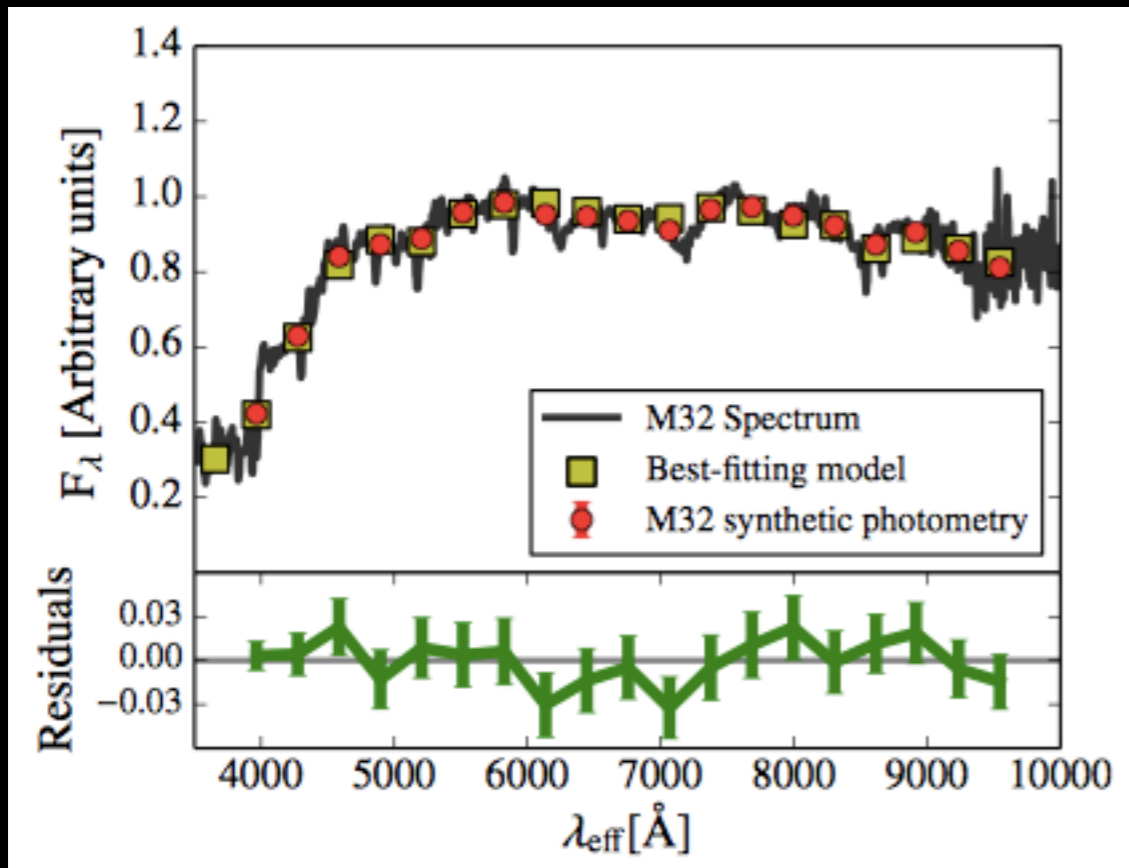
Benitez et al. (2014)



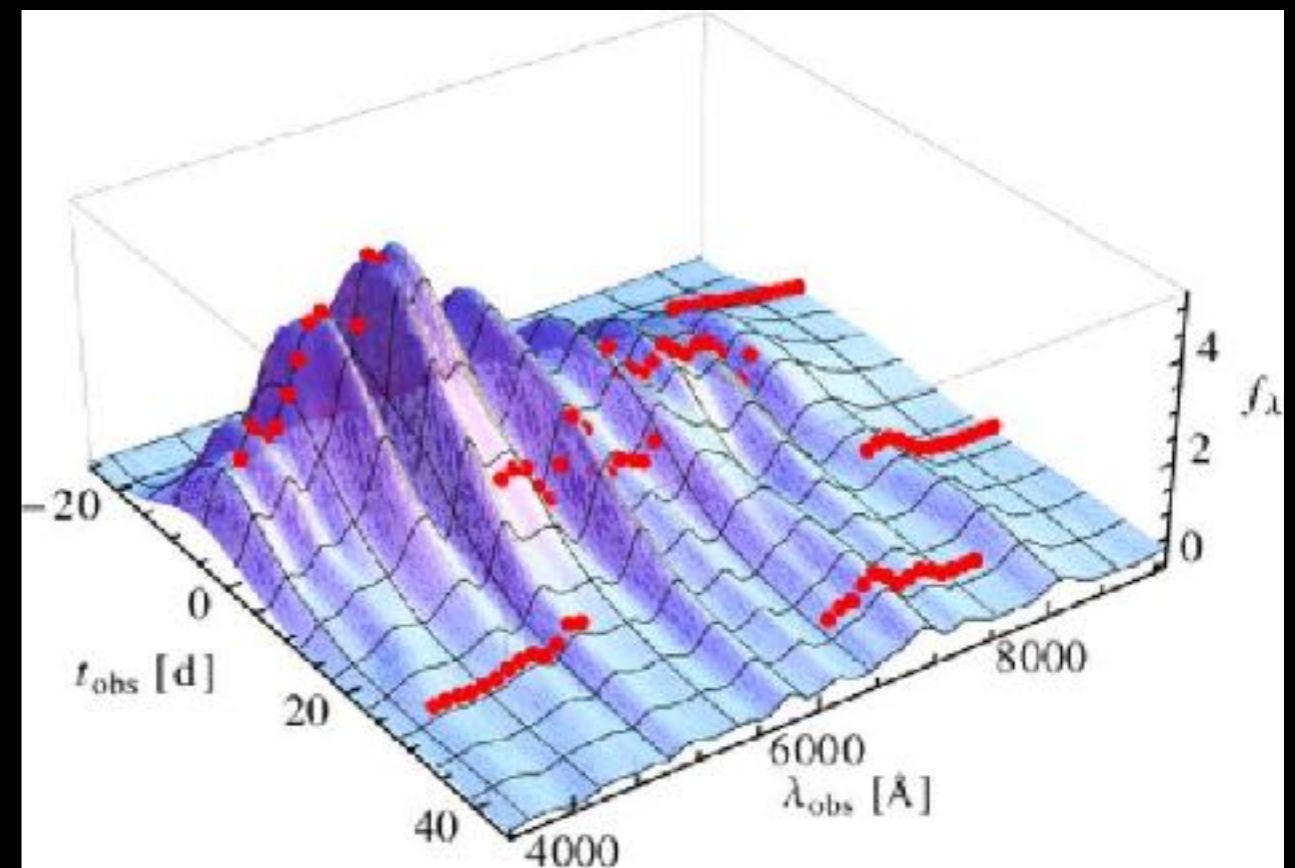
AGNs in J-PAS



... more SEDs

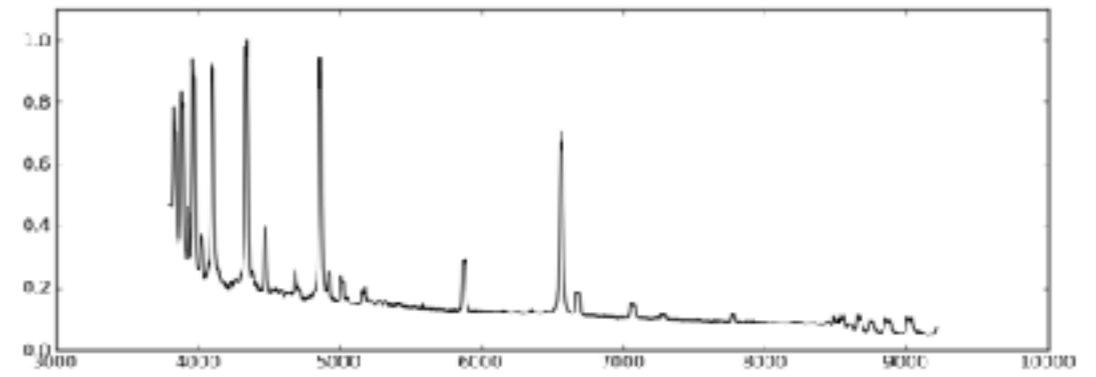
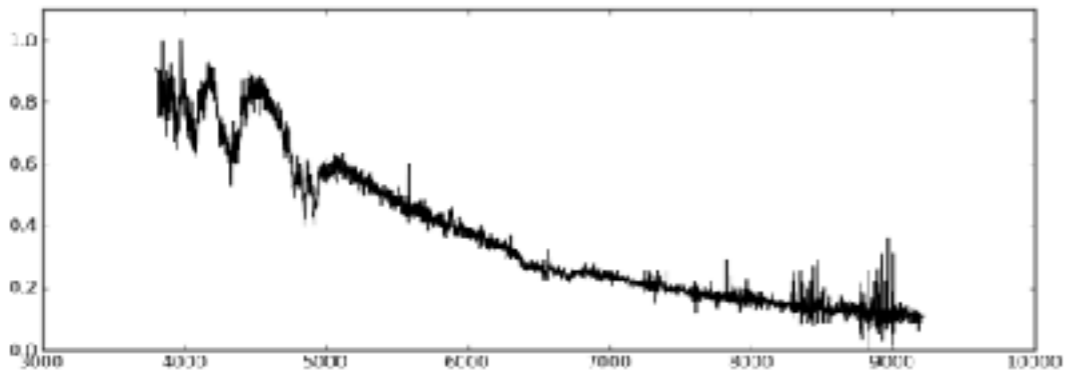
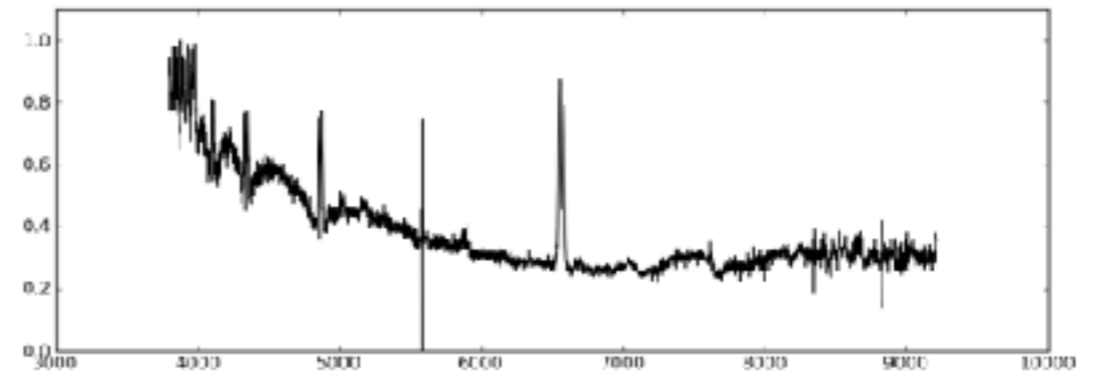
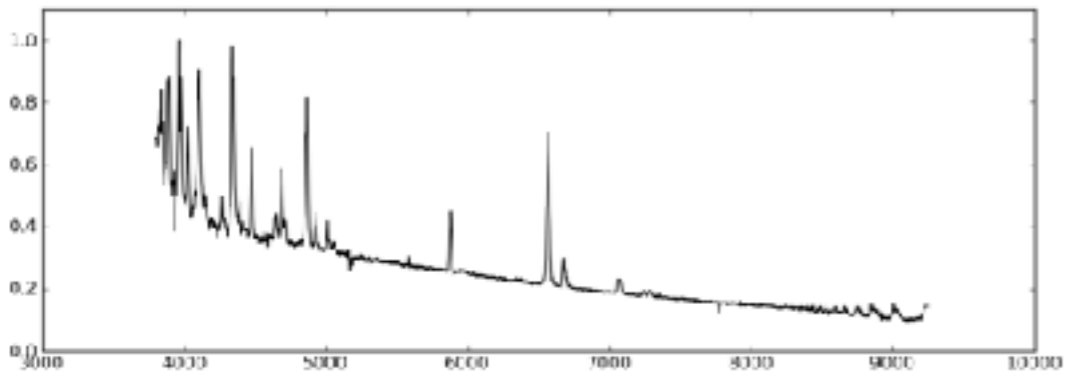


M32

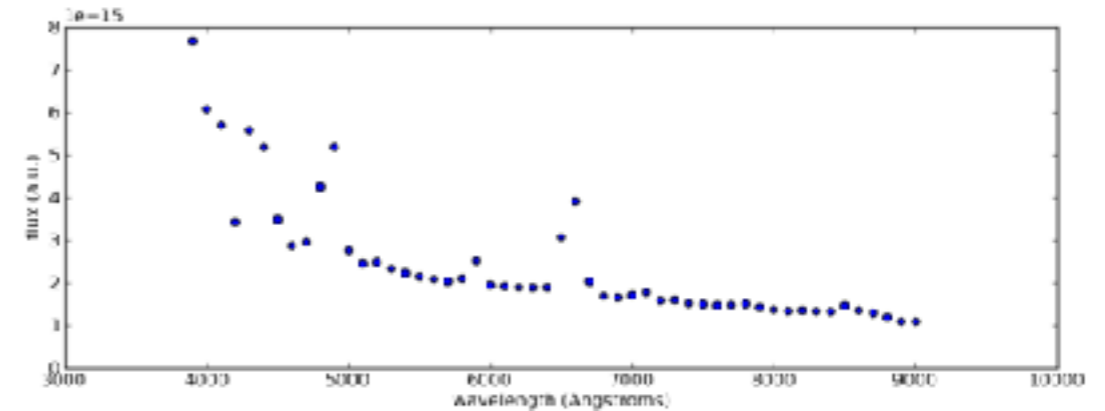
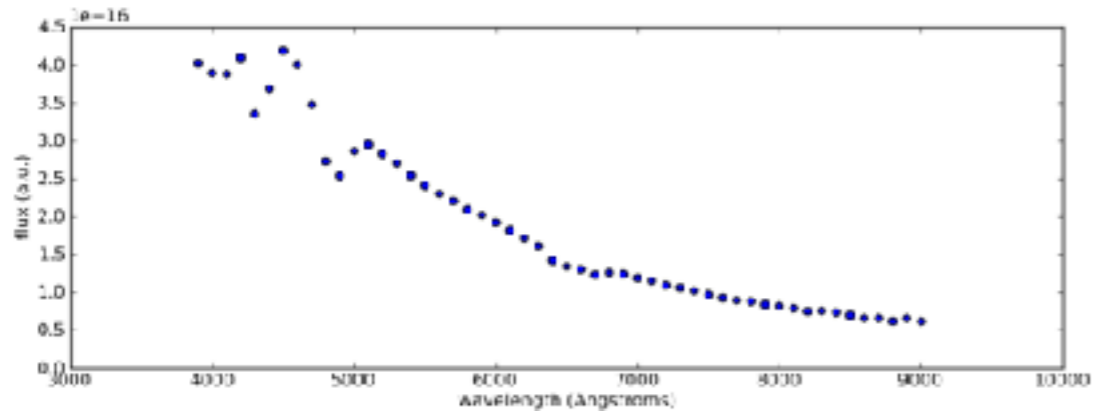
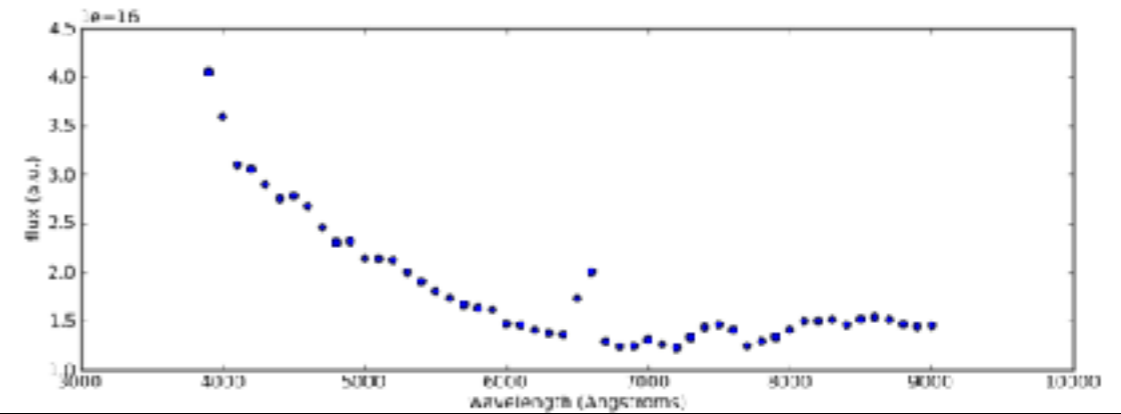
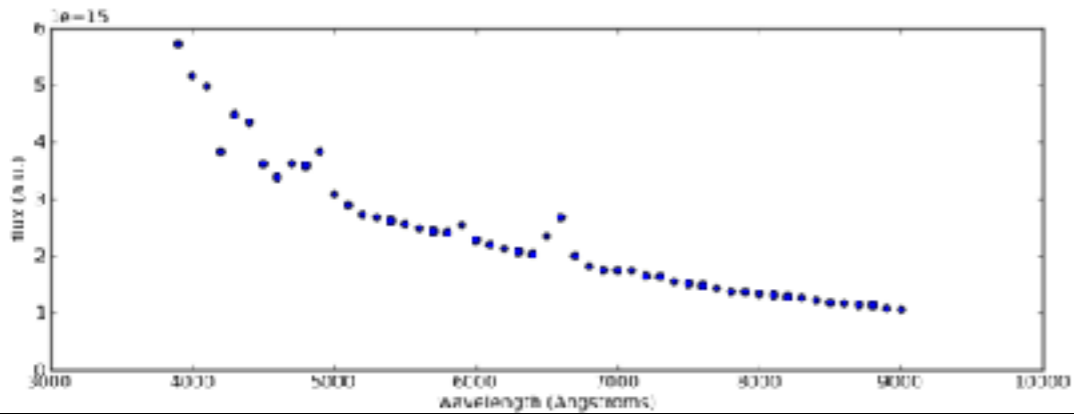


SNe (Xavier et al. 2014)

Cataclysmic Variables



Cataclysmic Variables



T80/JAST



80cm

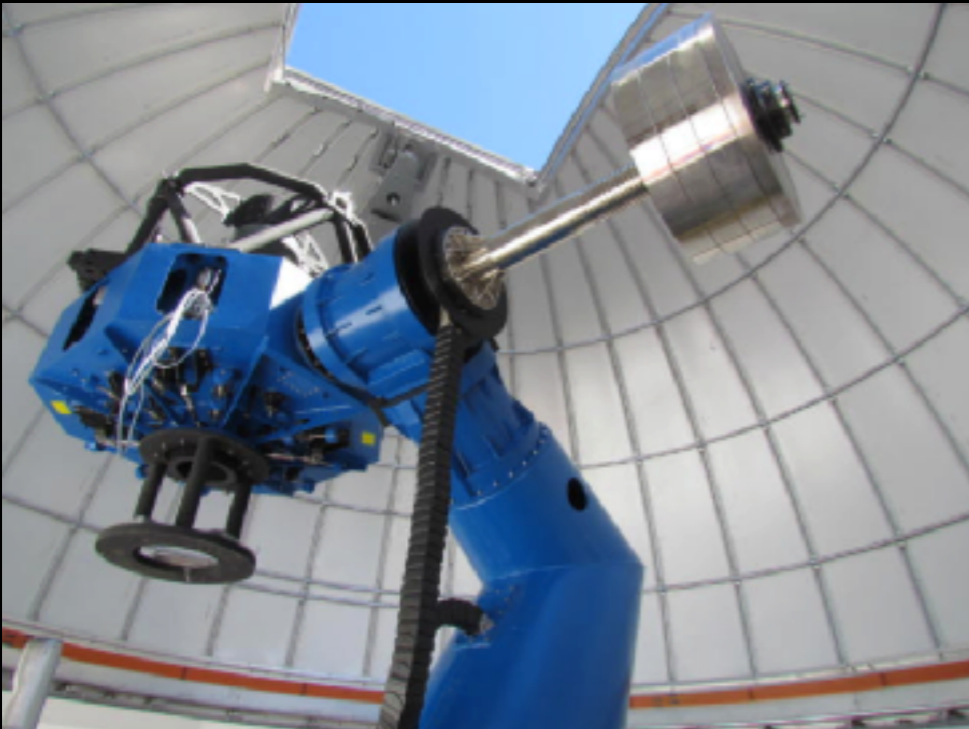
f/4.5

FoV ~ 2sq.deg.

9k x 9k CCD

S-PLUS

Twin hardware but located @ CTIO

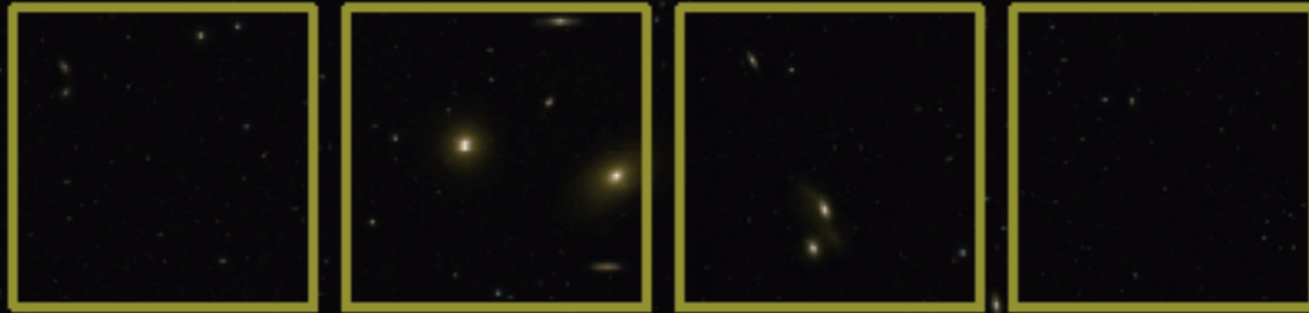




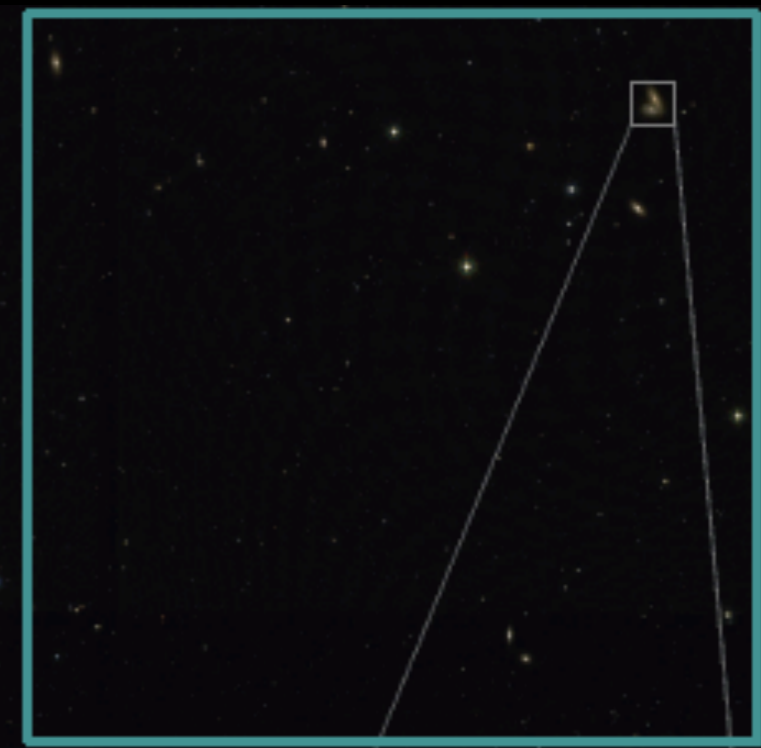
WFPC2@HST

OSIRIS@GTC

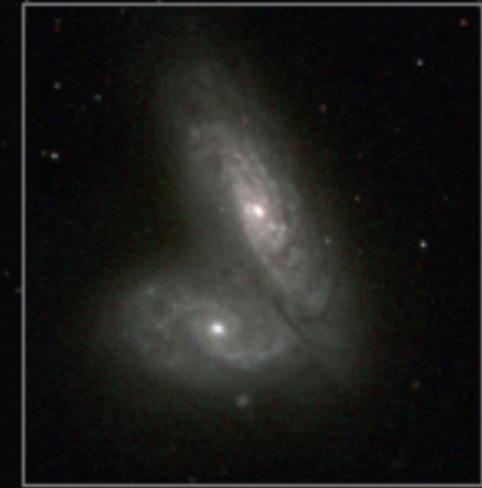
WFC@INT



JPCam@JST/T250

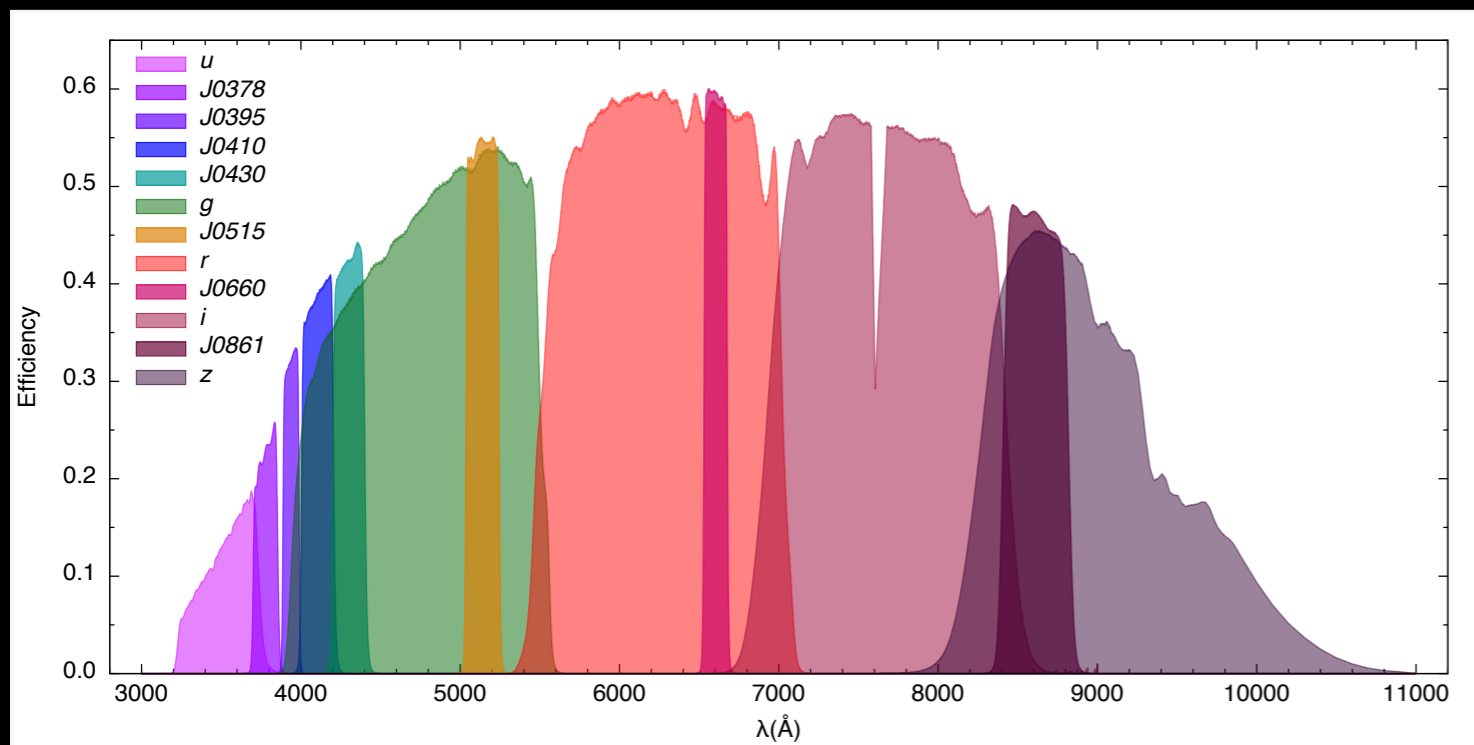
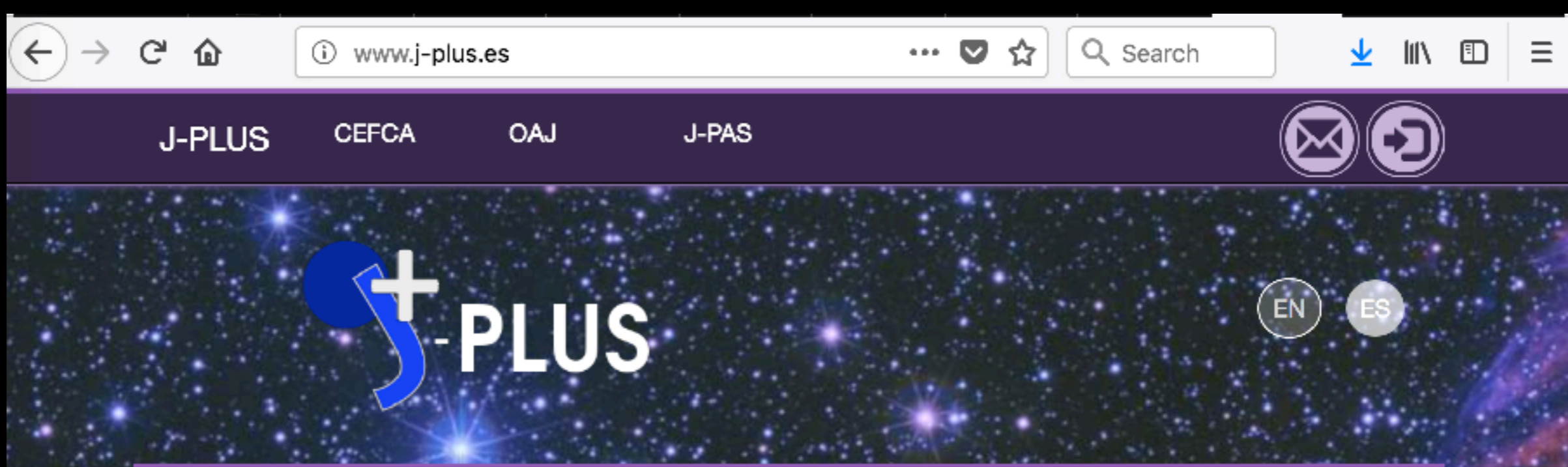


T80Cam@JAST/T80





	Telescope		Camera				
	Size	FoV	# CCDs	CCD format	# of pixels	Resolution	Filters
LSST	8.4m	9.6 sq. deg.	189	4096 x 4096	3.2 Gpixels	0.2"/pix	u, g, r, i, z, y
PanStarrs	1.8m	6.7 sq. deg.	60	4600 x 4600	1.3 Gpixels	0.26"/pix	g, r, i, z, y
JPCam	2.5m	4.9 sq. deg.	14	9231 x 9216	1.2 Gpixels	0.23"/pix	54NB + 2BB
HyperSuprimeCam	8.2m	1.8 sq. deg.	112	2048 x 4096	940 Mpixels	0.18"/pix	r, i, z, y
VIS (Euclid)	1.2m	0.5 sq. deg.	36	4096 x 4096	520 Mpixels	0.1"/pix	R, I, Z
DECam	4m	3 sq. deg.	62	2048 x 4096	500 Mpixels	0.27"/pix	g, r, i, z, y
Megacam	3.6m	1 sq. deg.	32	2048 x 4096	340 Mpixels	0.19"/pix	u, g, r, i, z
Omegacam	2.6m	1 sq. deg.	32	2048 x 4096	340 Mpixels	0.21"/pix	u, g, r, i, z
JPAS-Path Finder	2.5m	0.45 sq. deg.	1	10580x10560	110 Mpixels	0.23"/pix	g, r, i + NBs
T80Cam	0.8m	2.1 sq. deg.	1	10580x10560	110 Mpixels	0.5"/pix	u, g, r, i, z + 7NB
SuprimeCam	8.2m	0.25 sq. deg.	10	2048 x 4096	80 Mpixels	0.2"/pix	g, r, i, z, y



EDR

Oct 2017

36 sq.deg

DR1

Jul 2018

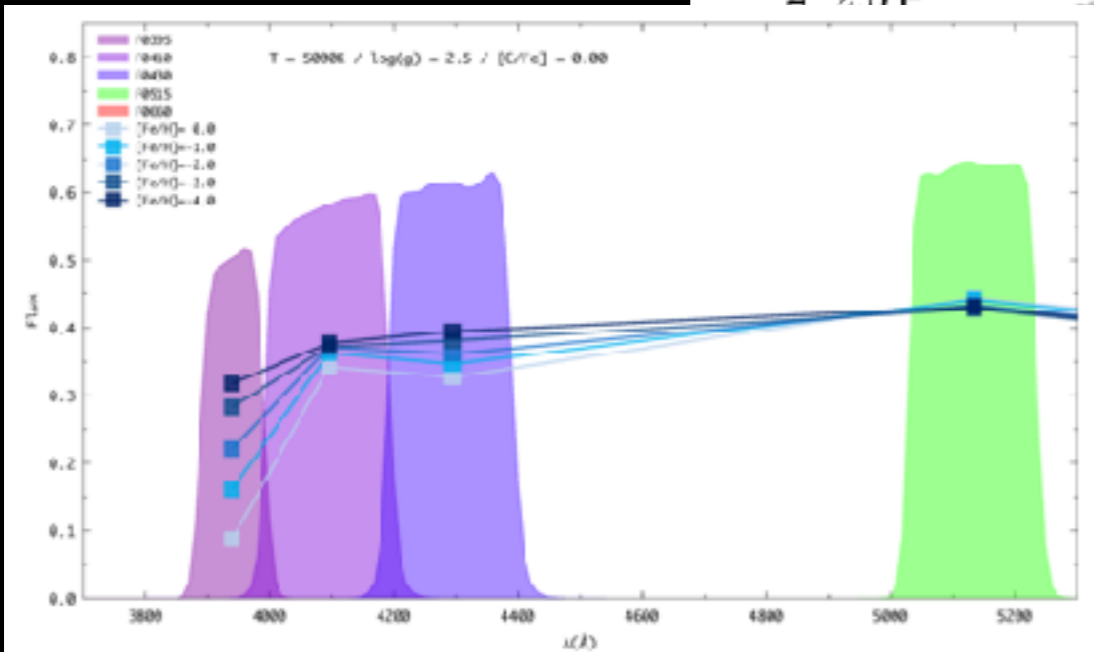
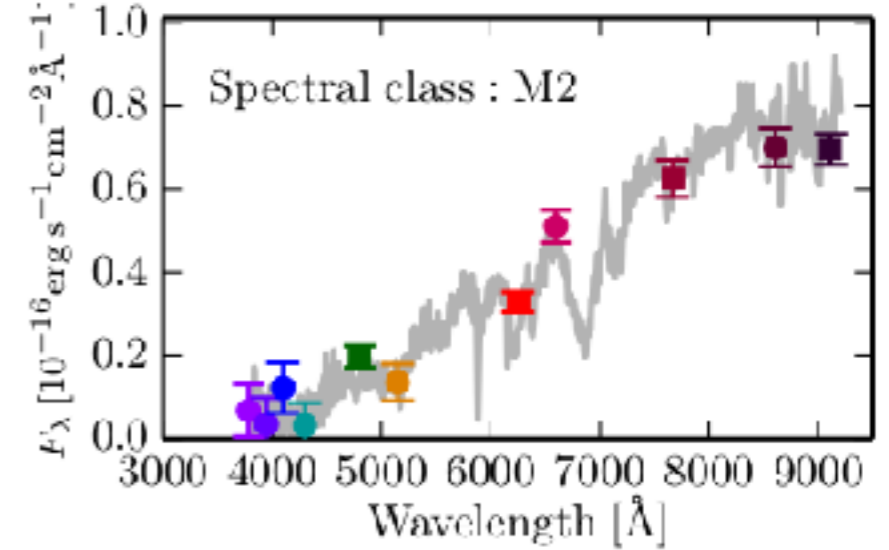
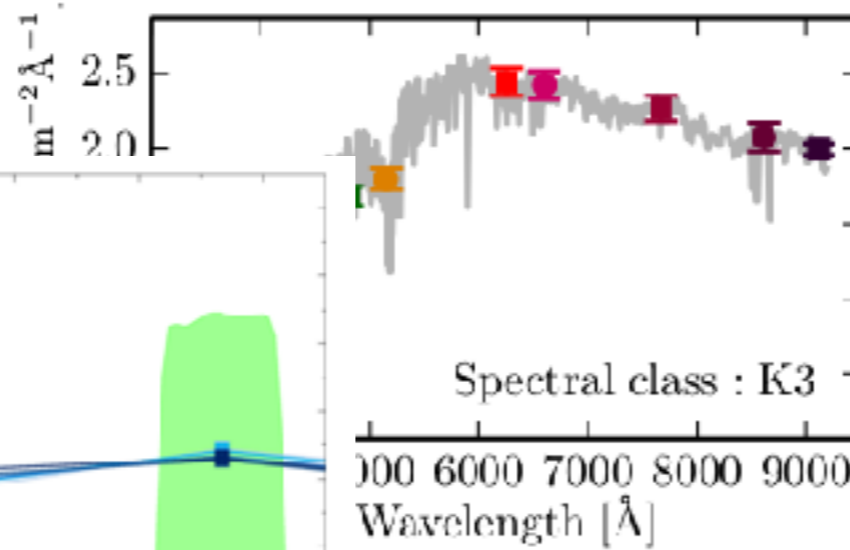
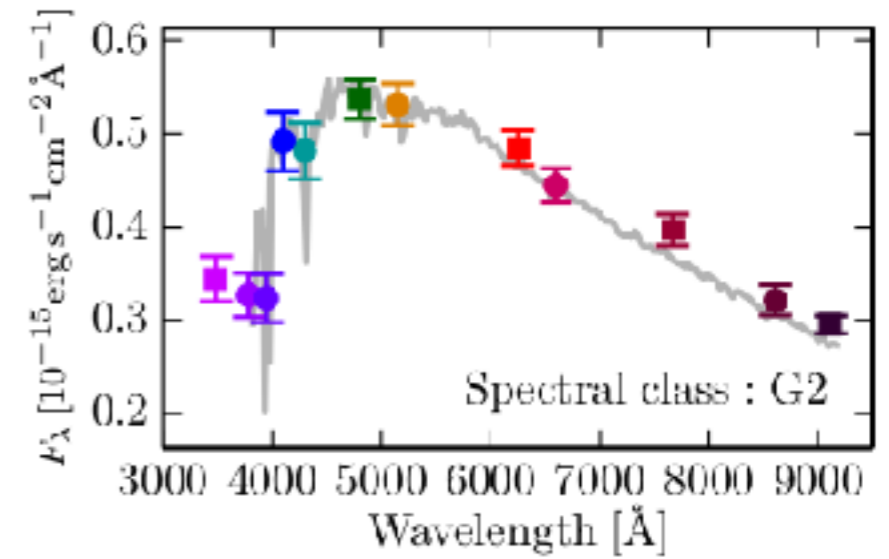
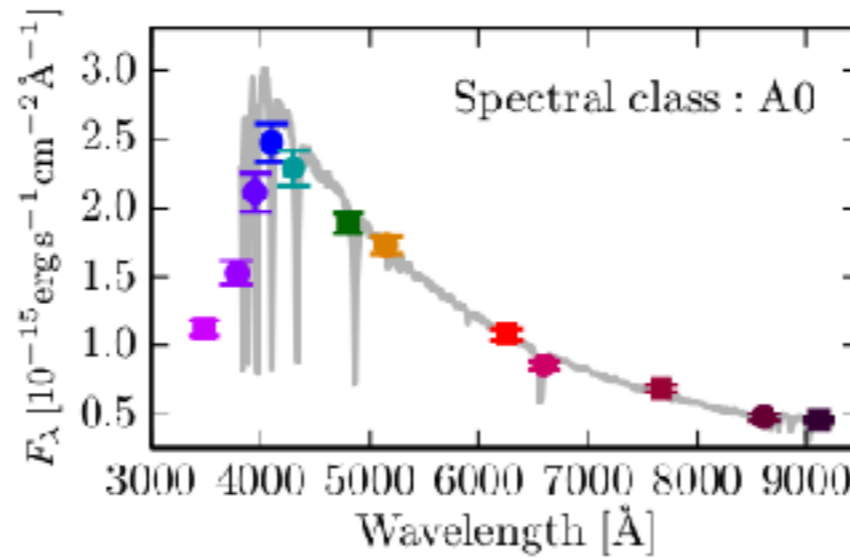
1000 sq.deg.

13 M objects

<https://archive.cefca.es/catalogues/login>

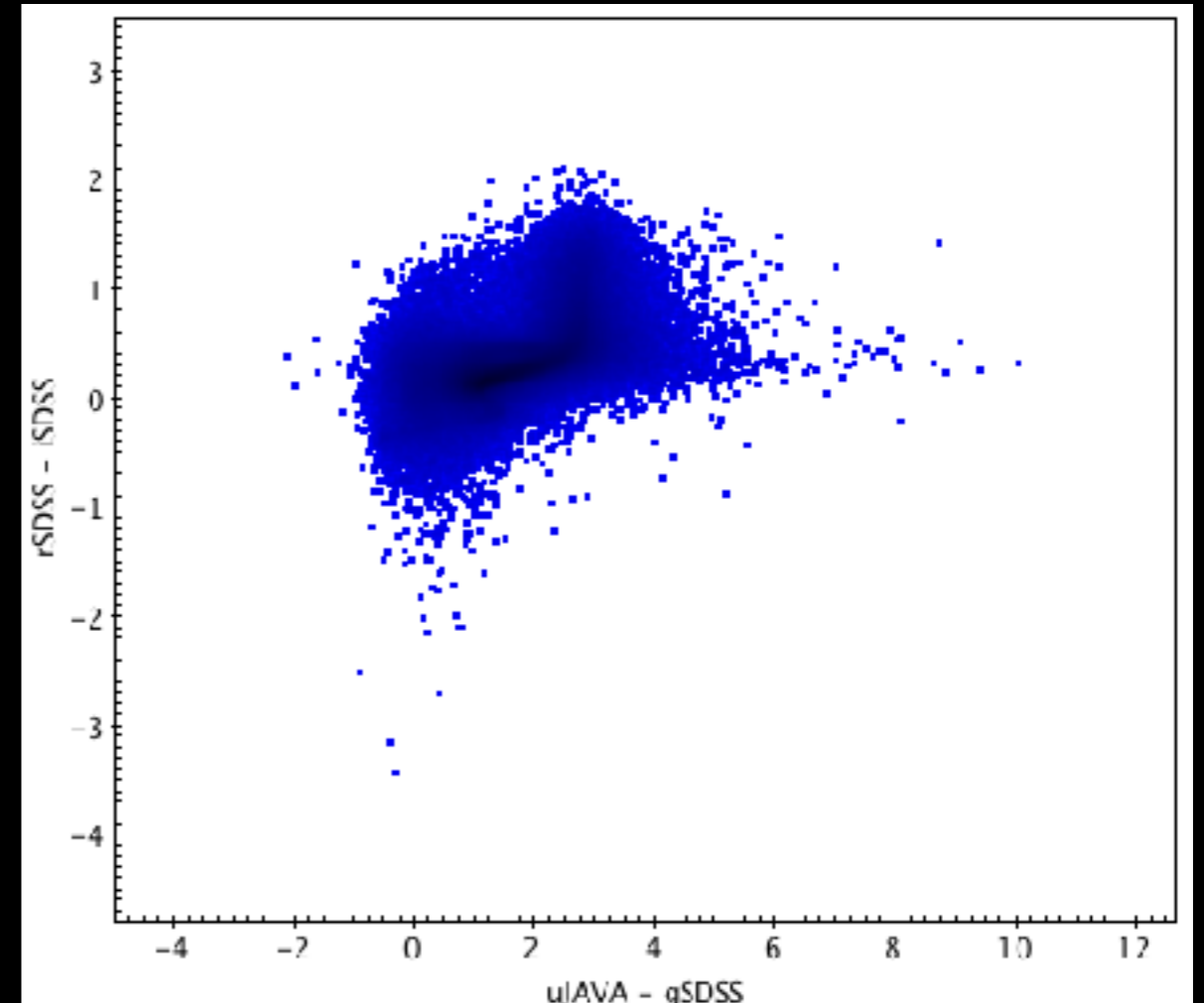
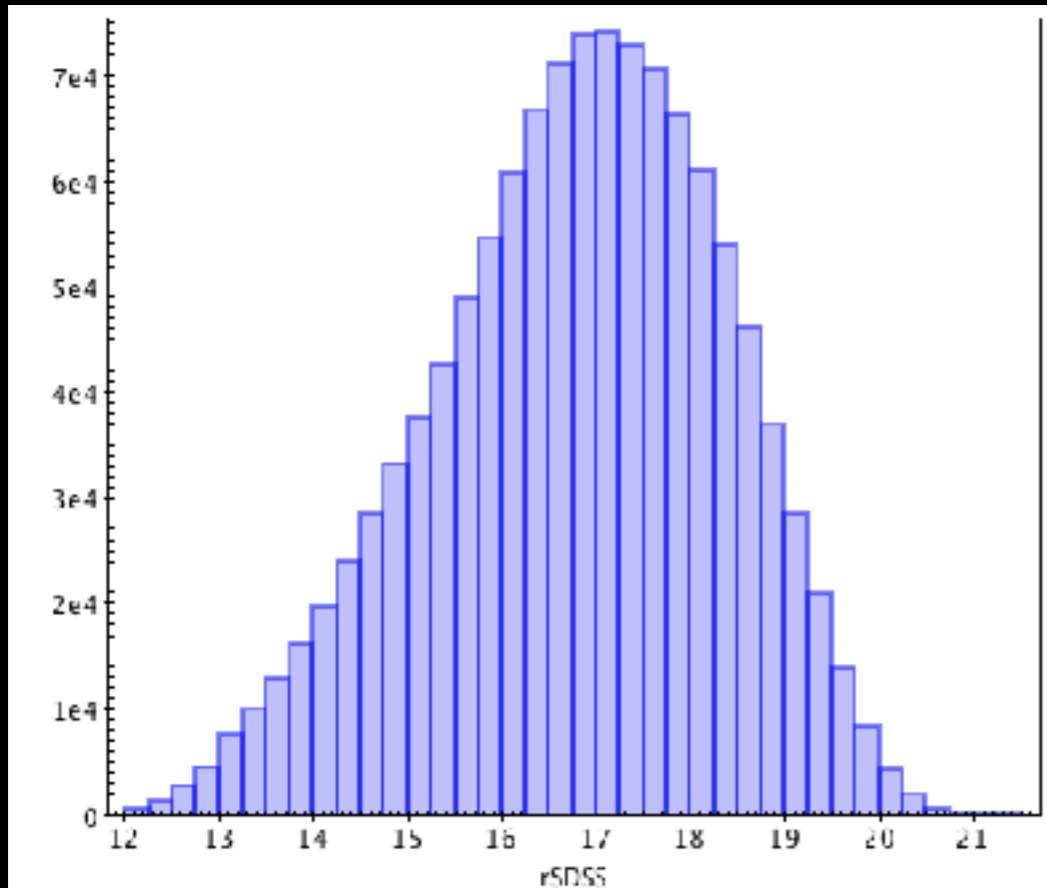
Stars in J-PLUS

Cenarro et al.
(2018)



<= Metal poor stars

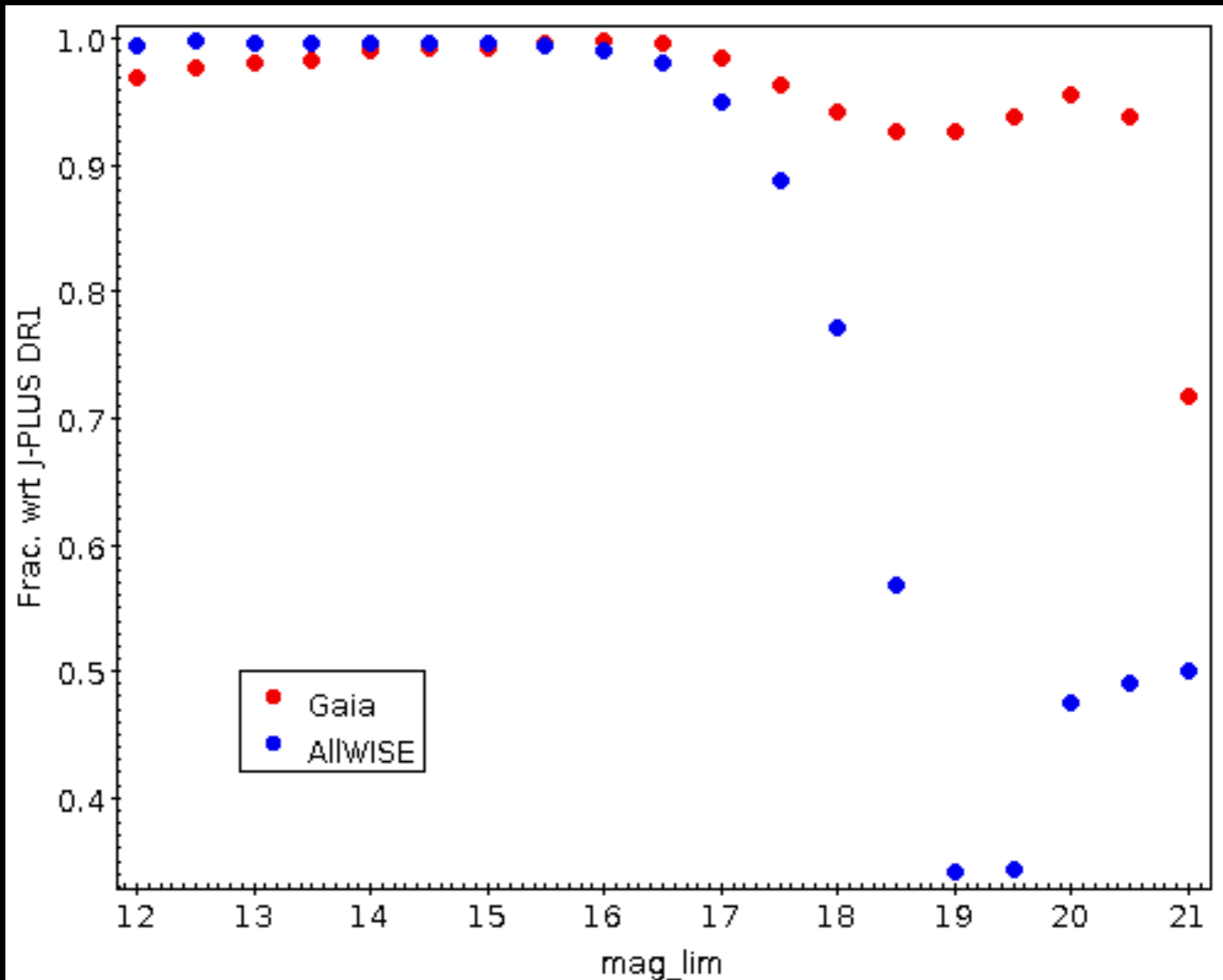
J-PLUS Gold



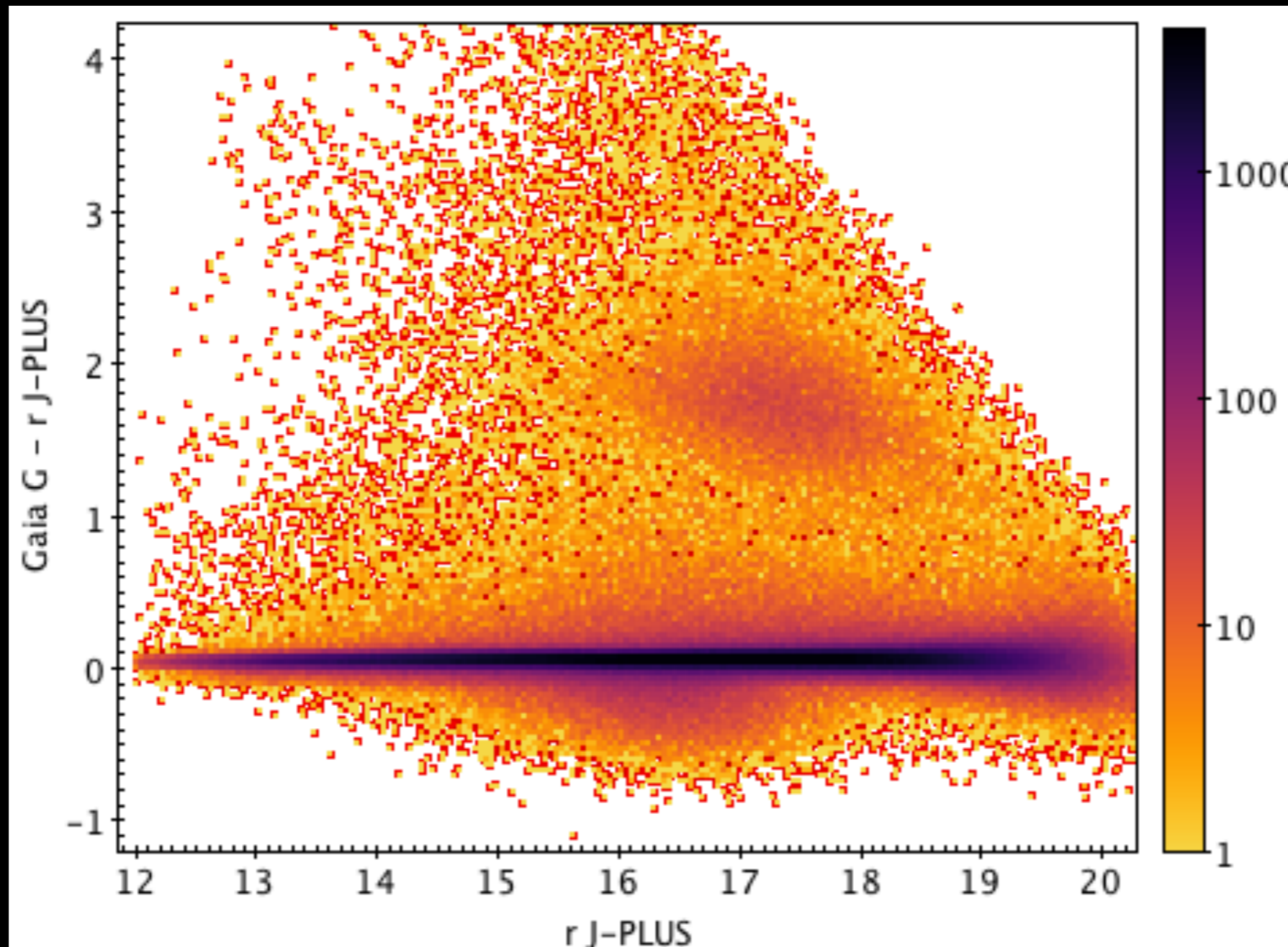
For each filter:

-) $\text{mag_err_aper_6_0} < 0.1$ — S/N cut
-) $\text{norm_wmap_val} > 0.8$ — avoids sky regions not observed at full depth
-) $\text{mask_flags} = 0$ — avoids regions with known issues
-) $\text{single_detect} > 0$ — detection in all filters
-) $\text{flags} = 0$ — good photometry

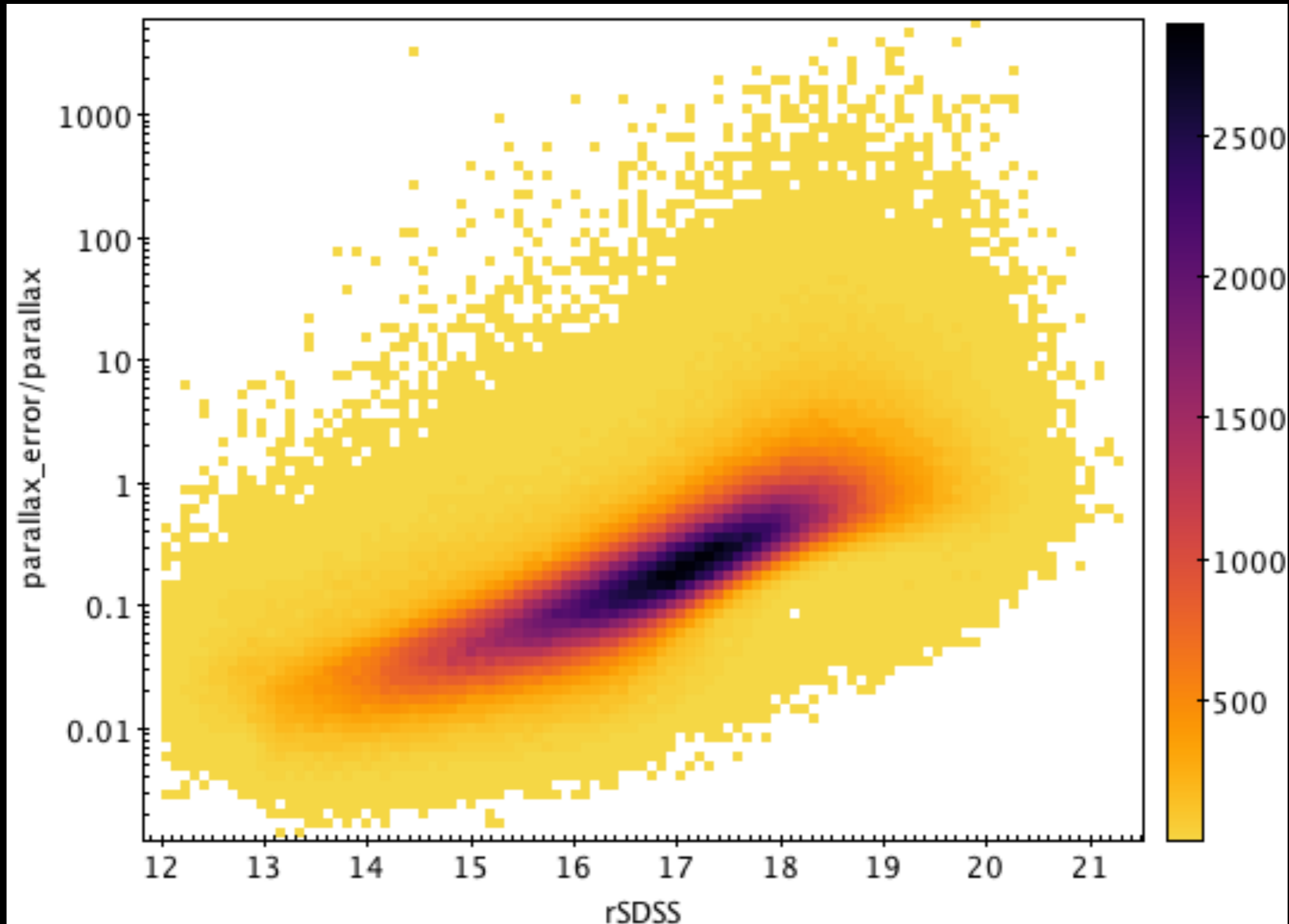
J-PLUS - Gaia



J-PLUS - Gaia



Gaia Distances

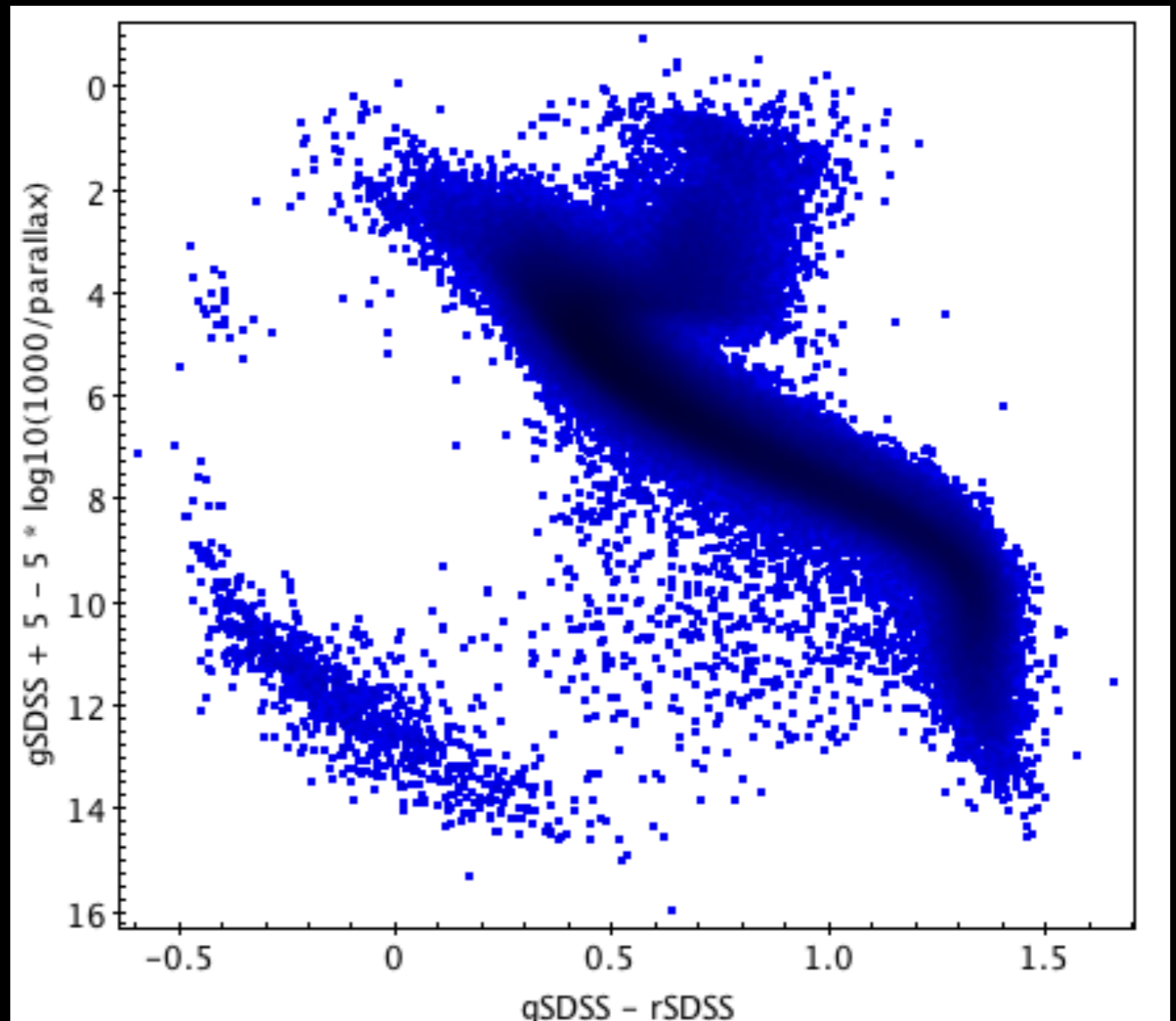


J-PLUS Gaia CMD

We can do science right away

**Objects that can be used
to train
machine learning algorithms**

**People from Galicia:
accept the challenge?**



Temperatures



VO SED Analyzer

This is VOSA 6.0

This project has received funding from the European Union's Seventh Framework Programme (FP7-SPACE-2013-1) for research, technological development and demonstration under grant agreement no. 606740



Files

Objects

Build SEDs

Analyse SEDs

HR Diag.

Results

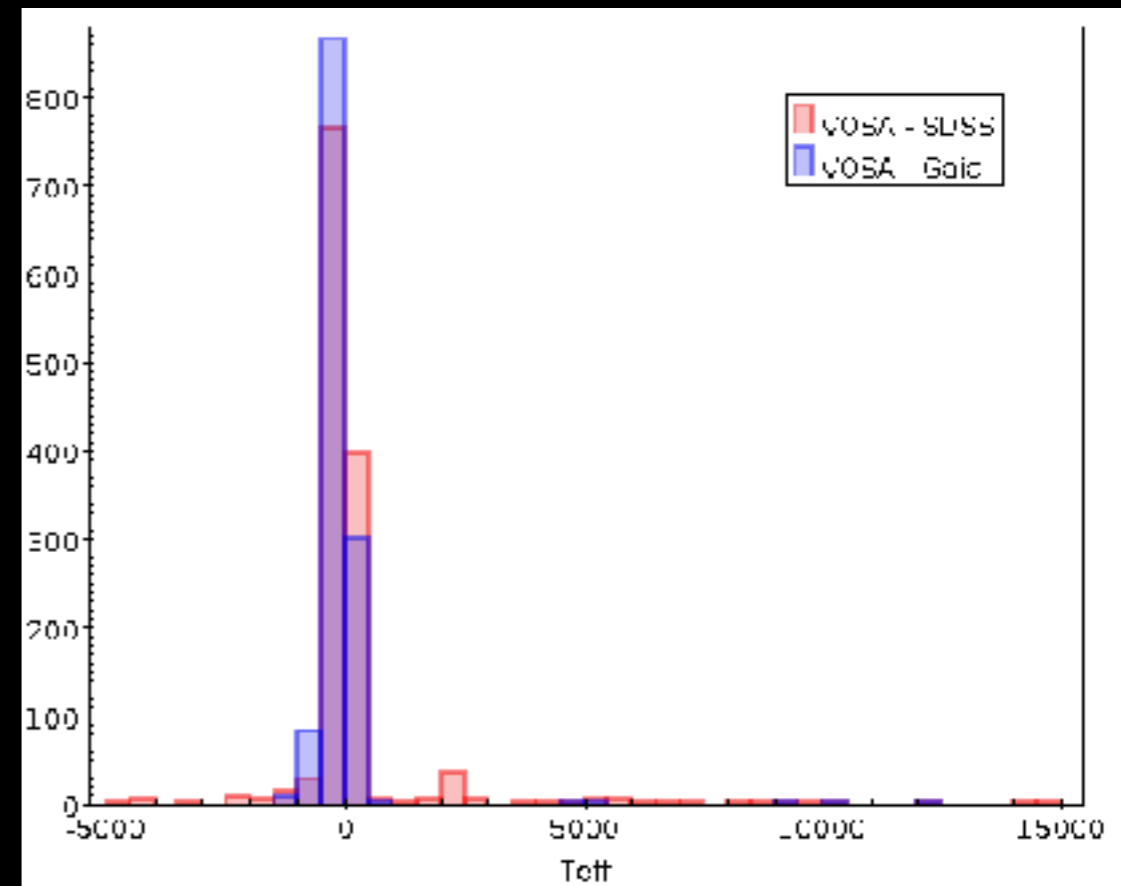
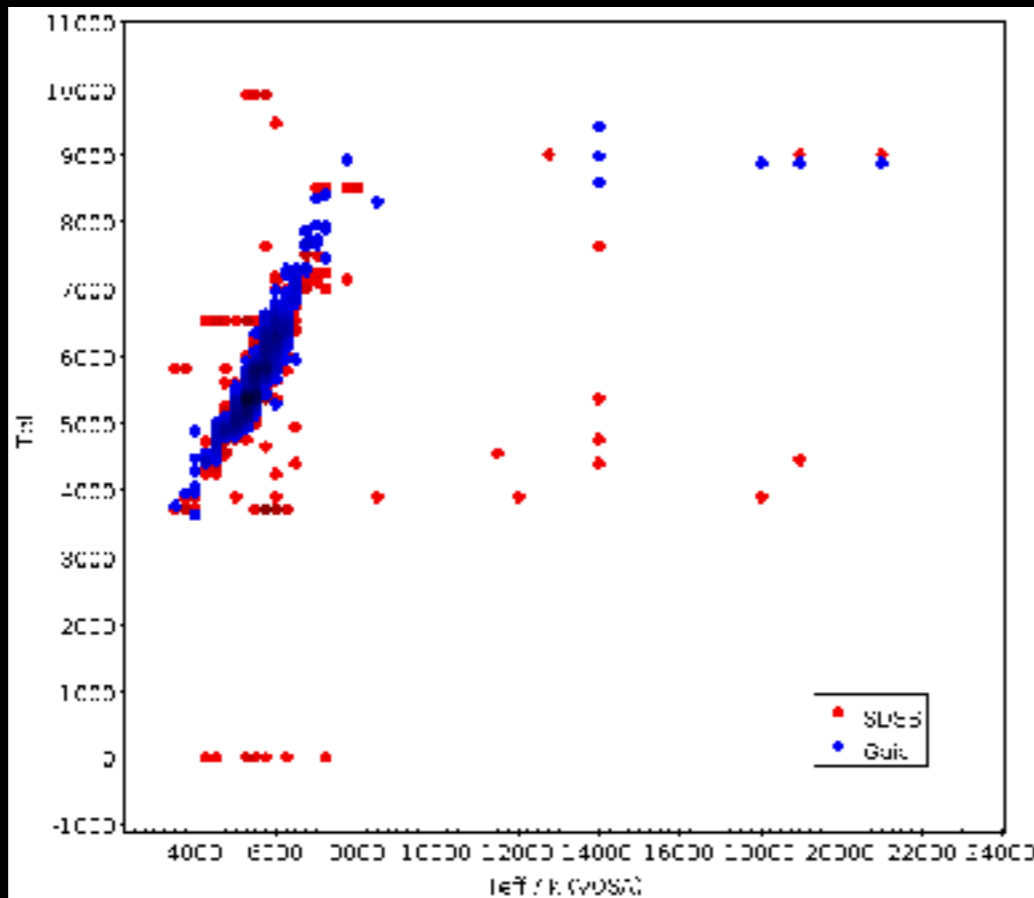
Help

GALEX

J-PLUS

2MASS

WISE



Conclusions

- The OAJ is a new Spanish astronomical facility (20% of open time offered)
- J-PAS is a unique survey to get low-res “spectra” of every piece of sky in 8500sq.deg. of the Northern extragalactic hemisphere
- J-/S-PLUS will provide stellar parameters for a vast amount of stars. In particular, SED well sampled at $\lambda < 4500\text{\AA}$
- Synergy
 - J-Surveys -> Gaia Extension to fainter magnitudes than Gaia
 - Gaia -> J-Surveys -> Parallaxes, Proper Motions



Thank you

- thanks to the Spanish Astronomical Community for the hospitality and friendship
- thanks to the Spanish Astronomical Society for the support (had the pleasure of being in the LOC of the XI RC)
- thanks to all who shared their time and effort during the heroic times of OSIRIS (and the CONSOLIDER-GTC) and OAJ (J-PAS, J-PLUS, GALANTE, J-VAR,...)
- thanks to the REG

You are very welcome to São Paulo!

**Mi casa es tu casa
but I do not share caipirinha**